ZKRD Zentrales
Knochenmarkspender-
Register Deutschland

ZKRD's Rules of Operation for International Partners

2020-10-22

Version 12

Zentrales Knochenmarkspender-Register für die Bundesrepublik Deutschland gemeinnützige GmbH

Handelsregister Ulm · HRB 2566

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Contents

1 Introduction

1.1 Purpose of this Document

This document gives basic information to registries or transplant centers outside Germany on how to access German donors through the ZKRD. It also provides an overview on our business processes and the resulting expectations we have when requesting services abroad for our patients.

The document addresses experienced staff of registries and transplant centers involved in hematopoetic stem cell transplantation and gives references regarding certain aspects of the search process and the access to our donors in general. It is not intended to provide comprehensive or detailed insight into registry activities or to replace other ZKRD specific documentation.

More specific information on ZKRD requirements can be found in the "German Standards" (http://www.zkrd.de/en/about_the_zkrd/german_standards.php). Please also refer to the WMDA Standards as an international reference (http://www.wmda.info/professionals/quality-and-accreditation/wmda-standards), as well as to the ZKRD's organizational and regulatory information, available on the WMDA website.

1.2 ZKRD and Related Institutions

The ZKRD was founded in 1992 with the support of the German Ministry of Health as the national hub for unrelated donor searches. At the national level, ZKRD currently cooperates with about 25 donor centers, 70 transplant centers and 20 search units.

- **Donor Centers (DC)** in Germany are responsible for the recruitment of donors and manage services involving personal contact with the donor, including completion of donor-specific requests.

- **Search Units (SU)** coordinate communication with the Transplant Center concerning the search process for patients of one or more transplant centers, typically up to the identification of a suitable donor.

- **Transplant Centers (TC)** perform the actual transplants and typically take over the process from the Search Unit once a donor has been selected and a workup request is pending.

On an international level, the ZKRD cooperates with registries worldwide and also maintains direct contact with TCs outside of Germany, particularly when for the latter no national registry support has been established for performing international donor searches and acquiring foreign stem cell products.

Generally, the ZKRD tries to streamline the search process for national and international patients as far as possible. In particular it

- facilitates hub-to-hub communication as a service to national TCs and DCs,
- promotes the utilization of computer links based on the EMDIS technology to enable automated processing of requests and exchange of messages and
- creates and maintains forms, as required by WMDA standards to be used for the workup process and the communication with TCs and DCs (see https://partner.zkrd.de/en/contents/22, Login required, for ZKRD forms).

ZKRD has been WMDA accredited since 2007. All German cooperative partners must adhere to the WMDA Standards as well as to the German Standards, including all pertinent national and international laws and regulations.

1.3 Contact Details

ADDRESS:	ZKRD Zentrales Knochenmarkspender-Register für die Bundesrepublik Deutschland gemeinnützige GmbH (German National Bone Marrow Donor Registry) Helmholtzstraße 10, 89081 Ulm, Germany
MAIL ADDRESS:	POB 4244, 89032 Ulm, Germany
E-MAIL:	secretary@zkrd.de

PHONE:

Office Management	(+49) 731-1507-000
Search and Transplant Services	
Search	(+49) 731-1507-220
Workup	(+49) 731-1507-240
Post-Transplant Services	(+49) 731-1507-280
Transport and Product Services	(+49) 731-1507-260
Finance	(+49) 731-1507-300
IT-Department	(+49) 731-1507-400

2 Obtaining Donors through ZKRD

2.1 Patient-Related Information

2.1.1 Preliminary Search

Preliminary searches can routinely be initiated from outside of Germany

- by registries that are operating according to WMDA standards on behalf of cooperating TCs in their country or
- by TCs from countries without an established registry or which have a compelling reason to ask for direct cooperation with ZKRD.

New registries wishing to cooperate with the ZKRD need to contact us before sending an initial search request, since modalities regarding qualification (according to WMDA standards), contact persons, data transmission, and billing need to be clarified and implemented before requests can be processed (form SU_009, available upon request).

TCs seeking a direct cooperation with the ZKRD should have an accreditation for allogeneic transplants from JACIE or a comparable organization. If such accreditation is not available, TCs may establish their eligibility by providing specific details which may be subject to approval by the ZKRD's Medical Director (form SU_021, available upon request). Alternatively, the WMDA Transplant Center Evaluation Form may be submitted.

Searches at ZKRD are typically initiated

- using the EMDIS network or,
- using the WMDA preliminary search form or,
- an equivalent.

In addition to patient name and HLA data (recommended in high resolution), birthdate, diagnosis and patient gender are required before a search is initiated. It is recommended to provide information about the intended transplant center when initiating a search in order to prevent delays later during the search or workup process.

Technical information/EMDIS

Incoming patient update [PAT_UPD]

- We require either serological or molecular data for at least HLA-A, -B and -DR(B1).
- Search requests for patients older than 85 years will not be accepted.
- Combination of diagnosis and disease phase is checked for plausibility (see Table 1); disease phase is blanked and a WARNING is sent back if the combination is invalid.
- The following default "matching preferences" are applied if no matching preferences are provided along with the PAT_UPD:
  P_MATCH_AB = 0:XX:40:2020XXXXXX/
  P_MATCH_DR = 0:XX:60:2020XX20XX/
  P_MATCH_CB = 0:XX:62:2222XX22XX/ i.e. we routinely exclude antigen mismatches for HLA-A, -B and -DR(B1) but no allelic mismatches for donors but accept up to two antigen mismatches for cord blood units.
- Antigen mismatch searches of AB-only typed donors will not be performed; the default AB matching preferences will be applied instead.

Table 1: Valid combinations of [P_DIAG] and disease phase [P_DIS_PHA] EMDIS-Data Dictionary*.

diagnosis	phase	diagnosis	phase	diagnosis	phase
ALL	AD	HIS	NA	NHL	Cn
ALL	Cn	HL	Cn	NHL	PF
ALL	PF	HL	PF	NHL	Pn
ALL	Pn	HL	Pn	NHL	Rn
ALL	PI	HL	Rn	OL	Cn
ALL	Rn	IEA	NA	OL	Pn
AML	AD	IIS	NA	OL	RD
AML	Cn	IMD	NA	OL	SD
AML	PF	IPA	NA	OM	None
AML	Pn	MDS	AD	OND	NA
AML	PI	MDS	Cn	PCD	AD
AML	Rn	MDS	PF	PCD	Cn
CML	AP	MDS	Pn	PCD	PF
CML	BC	MDS	PI	PCD	Pn
CML	Nn	MDS	Rn	SAA	NA

* see https://share.wmda.info/display/EMDISPUB/Main+documentation

2.1.2 Activation

Searches performed electronically via EMDIS must be set to status "active" before further requests can be accepted. For patients activated within EMDIS, search is carried out every night automatically and a new search report is generated.

All non-EMDIS searches are automatically activated when the first request is made on behalf of a patient. New search reports are provided upon request.

Technical information

Incoming patient status change [PAT_STAT]

- A ZKRD search coordinator is notified if the patient age is above 69 years or diagnosis is one of OM (Other Malignancy) or OL (Other Leukaemia) upon activation of the patient.
- The ZKRD database is checked for duplicate patient records at activation.

If inquiries occur, ZKRD will contact the requester.

2.1.3 Cancellation/Discontinuation of Searches

There is no need to cancel a preliminary search which was never been activated. For activated searches, ZKRD expects a formal cancellation of the donor search. This is usually performed when a suitable donor has been identified and/or the patient proceeds to transplant, when the patient is no longer interested in or eligible for a transplant or when the requesting center loses contact with the patient. Furthermore, ZKRD suggests that a search can be cancelled after three months of no activity for a patient. The cancellation of a search can be informal, but must be in writing.

Technical information/EMDIS

Incoming patient status change [PAT_STAT]

- No special information

2.2 Donor-Related Information

Technical information/EMDIS

- Subsequently, the word "donors" always relates to "adult" donors, whereas adult are considered individuals who have reached the age of 18 at the time of a specific request.

Manually Requested Donors / Mismatched Donors

- In addition, ZKRD also provides specific donors to EMDIS upon request (e.g. a particular mismatched donor).
- Requests on such mismatched donors are accepted, however, a WARNING will be issued.

All incoming Requests [*_REQ]

- The "reference code" (REF_CODE) must be unique within the sending hub for all types of requests.
- If a requested donor was not reported for that patient or does not match anymore according to ZKRD matching criteria a WARNING is sent.

All incoming results [*_RES]

- Multiple identical results are rejected.
- Multiple different results are treated as updates/corrections.

2.2.1 Search Reports

The ZKRD provides search reports in a uniform layout which are based on the OptiMatch® program. The criteria for selection and sorting may be tailored to the specific needs of each patient. For primary selection of donors to be considered (search step 1) the patient's and donor's serological and molecular assignments regarding HLA loci A, B, C, DRB1 and DQB1 are taken into account

The order in which donors will be presented (search step 2) is based on:

a) the probability of (mis-)matching calculated on the basis of five locus haplotype frequencies regarding HLA-A~C~B~DRB1~DQB1, and

b) the donor's age

The search reports also contain information about HLA-DPB1-TCE3 permissivity and can be filtered according to various secondary search criteria (e.g. donor-CMV status, donor-Sex, etc.) in order to allow maximal customization to each specific patient's needs. Three separate search reports can be requested:

- potentially suitable donors typed for HLA-A and -B only
- potentially suitable donors typed for HLA-A, -B and -DRB1
- potentially suitable cord blood units

The final layout of the search reports depends largely on a substantial number of user-controlled parameters (filter criteria).

For non-EMDIS searches the number of donors shown on search reports and other parameters are set to "default", i.e. no antigen mismatches for HLA-A, -B and -DRB1 (HLA-C, DQB1 and DPB1 are not considered). If there are less than ten donors who fulfill these criteria, a one antigen mismatch search for HLA-A, -B or -DRB1 is automatically activated thereafter.

All parameters used to compile a search report can be changed by using EMDIS matching preferences for EMDIS patients or by sending a specific request to our search coordinators.

Cord Blood Unit (CBU) search reports, by default, allow up to two mismatches for HLA-A, -B (antigen level) and -DRB1 (allele level) and are available upon request.

Technical information/EMDIS

Outgoing search report [DONOR_CB]

- The donor pool information (DON_POOL) for national donors is set to ZKRD's ION (6939).
- The donor attribute (DON_ATTR) contains for each donor the three-character-abbreviation of the German donor centers (e.g. AKB, ULM, MBG, etc.).

Incoming search report [DONOR_CB]

- Donors/CBUs without a pool information (DON_POOL) are rejected.
- Changes or deletions of an existing GRID are rejected.
- Donors/CBUs with an unknown combination of sending EMDIS node (HUB_-SND/REG_SND) and donor pool are rejected.
- WARNING if search is cancelled (STP) or suspended (SUS) more than seven days.
- A donor (DON_TYPE = "D") must be at least 17 years old. For donors with age below 17 years a WARNING is issued.
- WARNING for donors who are older than 80 years and for Cord Blood Units that are collected before 1990.
- WARNING for donors whose CMV status is reported as negative but the CMV date is missing.

- WARNING if donor weight is less than 40 kg or more than 199 kg.
- WARNING if donor height is less than 100 cm or more than 250 cm.
- All errors are downgraded to WARNINGs if donor is to be deleted.

2.2.2 HLA-Typing

HLA tests requested will be performed by molecular methods in high resolution. If any typing is requested on a donor who has not yet been typed for HLA-DRB1, at least a high resolution HLA-DRB1 typing must be requested as part of the typing request.

- The results of **high resolution** testing provide at least the first two fields of the current WHO nomenclature for the HLA alleles separated by a colon. Ambiguities are allowed if they contain only variations outside exons 2 and 3 for HLA class I alleles and only variations outside exon 2 for HLA class II alleles.

Technical information/EMDIS

Incoming typing requests [TYP_REQ]

- Requests for invalid typing resolutions will be upgraded to high resolution.
- Requests for typing are not permitted if the requested HLA-information is already available.
- Multiple overlapping requests at the same time are not allowed.

Incoming typing Results [TYP_RES]

- Partial results are rejected.

2.2.3 Test for Infectious Disease Markers and Blood Group

The screening for infectious disease markers (IDM) at the confirmatory typing stage (CT) routinely comprises HBs-Ag, Anti-HBc, Anti-HCV, HIV-1/2, Treponema pallidum and Anti-CMV, and also includes the testing of the AB0 blood group and Rhesus factor.

If only a subset of the IDM screening tests is requested, the complete screening will be performed and invoiced. Testing for CMV antibodies, EBV antibodies or AB0 blood group with Rhesus factor, as well as for CCR5, may be requested individually.

Technical information/EMDIS

Incoming IDM requests [IDM_REQ]

- Only tests as described in 2.2.3 are allowed.
- If other tests are selected the complete request is rejected.
- If only a subset of the IDM screening tests is requested, the request will be automatically upgraded to the complete set of allowed tests ([1100101011100] and a WARNING is issued.
- CCR5 testing must be requested via fax or email.

IDM results [IDM_RES]

- Incoming partial results are rejected.
- After SMP_REQ: IDM screening according to 2.2.3 (corresponding to positions 1,2,5,7,9,10,11 [1100101011100]) is routinely provided.
- CCR5 results are reported via fax.

2.2.4 CT Sample Procurement

The patient must be registered in the ZKRD database with verified high resolution data for HLA-A, -B, -C, -DRB1 and -DQB1 at the time of CT request. The total quantity of blood requested for confirmatory typing must not exceed 50 ml per donor.

We cannot guarantee that blood samples will be provided exactly as requested. This may apply to the number and volume of tubes and, in some cases, to variations concerning the anticoagulant. Such deviations are due to the unavailability of certain types of tubes at some donor centers in Germany. The procurement of a blood sample always includes IDM screening (see 2.2.3).

Whenever possible, an advance notice is sent at least two days prior to sample arrival. The donor center is responsible for entering sample arrival date and sample labeling information into the system.

CT sample procurement for CBUs varies and depends on numerous factors. Material can be from a frozen DNA sample or an attached segment. The sample can be shipped to the requesting laboratory or tested at the cord blood bank.

All samples must be tested for HLA-A, -B, -C, -DRB1 and -DQB1 at high resolution. We expect to receive all test results obtained from samples provided (donor or CBU) as soon as possible, which should be within four weeks of sample

arrival. Unless a reservation of the donor or unit is explicitly requested with the transmission of the CT result, the donor/CBU will be released. If results are transmitted when a donor/CBU is already released, reservation must be requested separately indicating a reason. Monthly reminders regarding outstanding CT results are sent to the respective registry/TC by fax/e-mail. The ZKRD should be informed about samples delivered with substantial delay or damage.

If all or a part of the blood samples provided are to be used or stored for research purposes, an informed consent from the donor must be obtained and an anonymized copy sent to the ZKRD. Please provide details of the study along with the request. Non-standard testing (such as CCR5, KIR, etc.) may require additional consent, therefore, the ZKRD must be contacted upfront.

Technical information/EMDIS

Incoming sample requests [SMP_REQ]

- The total quantity of blood samples requested must not exceed 50 ml per request.
- Values for number of tubes must be between 1 and 9.
- The earliest date of sample reception must not be earlier than seven days prior to the date of request processing.
- The earliest date of sample reception must not be later than 30 days from the request processing date.
- The interval between earliest and latest date of sample reception must not be more than 35 days.
- The requested donor must have a valid HLA-DRB1 type.
- The field INST_SMP_SENT must contain a laboratory address registered at ZKRD (via EMDIS NEW_ADD message).

Incoming sample arrival information [SMP_ARR]

- The sample arrival date must not be later than 30 days from the message processing date.
- Arrival dates earlier than 7 days from the message processing date are not forwarded to the search units.

Incoming sample result [SMP_RES]

- The result must either contain at least one HLA value or the donor "release" with an explanation selected in the corresponding remark field.

- If a SMP_RES cannot be sent a NO_RES is expected.

- If a SMP_REQ is cancelled after the CT-sample has arrived and the courier has invoiced the transport at ZKRD, a NO_RES has to be sent to close the request. Without the NO_RES the request will continue to be shown on the list of open requests (EMDIS message RES_REM).

2.2.5 Health and availability check (HAC)

Under certain conditions a health and availability check (HAC) can be requested **instead** of a CT sample procurement. To protect the interests of donors, HAC should be the preferred option for donors who have previously (repeatedly) been requested for CT.

Prerequisites for this request are:

- DNA-based high resolution typing results for at least HLA-A, -B, -C, -DRB1 and -DQB1 must be available for the donor, and therefore, in the vast majority of cases it will be a 10/10 or 9/10 match.

- The donor has already had at least one previous confirmatory test (high resolution), in which the initial typing was verified for the loci HLA-A, -B, -C and -DRB1 at a minimum.

- If donor HLA typing has not been verified by previous confirmatory testing, there must be documented urgency for the transplantation, e.g. based on the specific diagnosis and the desired time frame for transplantation. Urgency is justified if transplantation must take place within 6 weeks after the search has been initiated.

- The health and availability check process requires an information session with the donor. The date of the information session, implicitly indicating the donor's general availability, is transmitted to the ZKRD and forwarded to the requesting institution.

- The same health history questionnaire used for the determination of donor medical suitability for CT sample procurement is also used for the health and availability check.

- Once assessment of the health history questionnaire has taken place, the donor center reports the donor's expected suitability and availability to the

ZKRD, as well as the number of transfusions, number of pregnancies, the donor's weight and height and any other results or additional information relevant to transplantation. The ZKRD forwards these to the requesting institution.

- After the results have been transmitted, the donor remains reserved for 4 weeks. The reservation may be extended at the request of the transplant center in justified cases. If there is no further response from the transplant center within these 4 weeks, the donor is released.

- If the donor is subsequently requested to donate, the required confirmatory typing must be performed during the workup process by means of pre-collection blood samples. The CT result must be provided before the donor starts with G-CSF application or before patient conditioning is initiated.

Technical information/EMDIS

- The health and availability check is currently not supported by EMDIS.

- Generally, a HAC can be requested by email.

- The results are reported by standard forms either via fax or (encrypted) email.

2.2.6 Cancellation and Expiration of Requests

Requests for HLA typing and IDM testing are valid for eight weeks. Requests for sample shipment (blood and DNA) are valid for six weeks. If the donor center is not able to complete the request within this time frame, the request is closed automatically and must be re-requested if still desired.

A request may be cancelled at any time. If processing cannot be stopped with any reasonable effort, an invoice will still be issued and must be paid. This is typically assumed if a typing or IDM result can be delivered within 14 days after cancellation. Search cancellation automatically cancels all pending requests except workup.

Technical information/EMDIS

Incoming request cancellation [REQ_CAN]

- No specific notes.

2.2.7 Reservation of a Donor

Donors are automatically reserved for the time of the request's validity (see 2.2.6). After the transmission of the test result the donor is automatically reserved for the specific patient for 14 days. If no further request arrives within this time the donor will be released. Donors previously not typed for HLA-DRB1 are released immediately if the DR(B1) typing reveals an "antigen split"-mismatch with the patient.

After dispatching a blood (DNA) sample, the donor is automatically reserved for 60 days. After that time, the donor will be released automatically unless a reservation request is transmitted together with the report of confirmatory typing results.

The maximum reservation period is three months. Requests for extension of this period shall include a justification.

Technical information/EMDIS

Implicit reservation of a donor after request / expiration of requests

A request is valid from the date of request as follows:

- Typing request: 8 weeks
- IDM request: 8 weeks
- Sample request: 6 weeks
- After cancellation: 2 weeks

Results modify the implicit reservation period:

- Typing result: result data + 2 weeks. Exception: Donors previously not typed for HLA-DRB1 are released immediately if the DR(B1) typing reveals an "antigen split"-mismatch with the patient.
- Sample arrival: A donor is implicitly reserved for a patient for 60 days after blood shipment – the sample result allows to release the donor or have it reserved for three month from result date.

Incoming explicit donor reservation request [RSV_REQ]

- An explicit donor reservation request is basically only accepted with a CT-sample result. There may be exceptions but they should be rare and accompanied by a compelling argument. The maximum reservation period is 180 days and the donor must be available.

3 Workup

3.1 Requirements

Workup requests shall be submitted using the most current version of the applicable ZKRD forms (available in the protected area of the ZKRD website at https://partner.zkrd.de/en/contents/22) or any other WMDA compliant forms. Eligible registries and TCs (see 2.2.1) can obtain a password for access to the protected area of the ZKRD website.

The requesting registry/TC must have submitted confirmatory typing results at least for the loci HLA-A, -B, -C, -DRB1 and -DQB1 demonstrating at least a 9/10 match at high resolution level. An inferior compatibility than 9/10 at high resolution will be subject to review.

In the case of a very urgent workup, CT and workup may be requested concurrently (see German Standards, chapter 5), but a high resolution CT result must be submitted before donor clearance can be issued. Such requests must be clearly identified as "parallel CT and workup". If such a CT request is submitted via EMDIS, it has to be designated as "parallel CT and workup" request in the remark field.

Requests on behalf of patients older than 70 years and/or with non-standard diagnoses are subject to review by the medical directors of the ZKRD and the donor center concerned.

If patient registration and donor testing requests have been processed automatically via EMDIS, patient eligibility may not have been subject to review until the workup stage.

Consult the German Standards for more details concerning donor workup, product transport and subsequent donation requests.

Technical information/EMDIS

Incoming workup requests [WOR_REQ]

- A WOR_REQ message via EMDIS is not sufficient to start a workup and is therefore rejected. (A workup must be requested by other means of communication.)

Incoming workup status information [MARR_STAT]

- MARR_STAT messages are not supported and will be rejected.

3.2 International Transport

For international transport requests the most current version of the applicable ZKRD forms (available in the protected area of the ZKRD website) or any other WMDA compliant forms shall be submitted. Additional paperwork is required for exporting products to countries outside of the EU. Consult Chapter 7 of the German Standards for more details.

4 Post-Transplant

4.1 Follow-up

Donor follow-up after stem cell donation is the responsibility of the donor centers and has to be carried out according to the "German Standards".

Patient follow-up is the responsibility of the transplant centers and has to be performed according to national and any applicable international standards.

In order to be able to support our centers appropriately we expect to receive upon request information about the recipient's condition three months and one year post transplant for international patients and additionally after two years for German patients (for German patients see German Standards Chapter 9).

4.2 Donor-Recipient Contact

Anonymous patient-donor contact is permitted immediately after the transplantation. Generally, personal contact is possible beginning two years after the transplant if the patient and the donor agree and sign a declaration of consent to release personal information. For more details see Chapter 9 of the German Standards.

5 Hosting of International Donors and Patients

To support Donor Centers, Search Units, Transplant Centers and Registries outside Germany, ZKRD is offering access to its IT infrastructure. We expect those international cooperation partners to adhere to WMDA standards as far as possible given their local circumstances. These partners are not subject to a regular review process similar to the one implemented for our national partners.

5.1 Hosting of International Donors

Currently, donors from organizations in several European countries (see Table 2) are hosted within the ZKRD. ZKRD's national donors and those of each of the international cooperation partners are treated as a separate "donor pool".

Table 2: Hosted donor centers

ID	Donor center	ION
AT-GFL	Verein Geben für Leben, Austria	4961
LU-MDP	Luxembourg Marrow Donor Program, Luxembourg	3099
PL-DKM*	Fundacja DKMS Polska, Poland	7414
PY-VKP	VKS Paraguay, Instituto Nacional de Ablacion y Trasplante (INAT)	2547

* hosting is scheduled to be discontinued as per April 2021

Separate search reports can be provided on-screen, as a PDF file or on paper for each of those pools, as well as an integrated search report of the consolidated donor pool. Services can be requested from those separate donor pools in much the same way as from German donors. Although partners are encouraged to adhere to our general practices, prices and conditions for hosted donors may vary. Please check our current price lists for details.

Technical information/EMDIS

- GRIDs of hosted donors consist of the same elements as the GRIDs of German donors (see Table 3), but they start with the ION of the respective hosted donor pool.

- CB_IDs of hosted CBUs currently must be prefixed with "DE" for technical reasons. The subsequent part of the CB_ID is formed according to the same pattern as the German CB_IDs, which is country code (2 letter ISO code), donor center ID (3 alpha characters), hyphen followed by up to 9 digits issued by the international donor center, e.g. DEATGFL-123456789.

Note: On ZKRD search reports only the three meaningful parts of a CB_ID, separated by dashes, are displayed, e.g. AT-GFL-123456789. How CB_IDs of our hosted CBUs are displayed in the system of a receiving EMDIS partner depends on their local implementation.

- The donor attribute (DON_ATTR) is empty for all hosted international donors.

- The donor pool (DON_POOL) contains the respective ION (see Table 2) for all hosted international donors.

5.2 Search Services for International Patients

Occasionally searches are performed for patients abroad who are considered for transplants in Germany or another country. In such cases, the ZKRD always guarantees the payment of every requested and duly performed service in the same way as for German patients.

Technical information/EMDIS

- No specific notes.

6 ZKRD Connection to EMDIS

6.1 Basics

- **Hub code:** DE
- **Email (for FML messages only):** emdis-auto(at)zkrd.de
- **Email (administrator):** emdisadm(at)zkrd.de
- **Fingerprint of PGP key:** 5DD3 235A DFCB 6779 C066 DC05 1CD1 A830 8968 993B (4096 bit / RSA)
- **Public PGP key:** Available in the protected area of the WMDA Share website

6.2 Implementation

- **ECS:** perlECS
- **FML:** Parsers employed: Lex/Yacc, C#
- **Matching:**
  The ZKRD matching program OptiMatch® provides separate search reports for A-B-typed and A-B-DRB1-typed adult donors and cord blood units. The number of donors reported and the criteria applied for selection and sorting are highly customisable. Specific haplotype frequency sets for patient and donors are taken into account when selecting donors. All EMDIS matching preferences defined so far are interpreted correctly. The numerous extra features can be activated by contacting our search coordinators for individual patients. Repeat searches reporting new or better matching donors are usually run overnight for searches with recent activity, and at least once a week for all active searches.

- **GRID format:**
  The GRID (Global Registration Identifier for Donors) of German donors complies with the WMDA standard (https://www.iccbba.org/tech-library/databases-reference-tables/grid-issuing-organizations). It consists of the elements shown in Table 3.

Table 3: Elements of GRID

Position	Admissible Characters	Specification and Description
1-4	digits from 0-9	Issuing Organization Number
5-17	5-7 characters from A-Z; 8-17 digits from 0-9	Registration Donor Identifier
18-19	digits from 0-9	Checksum

- **CB_ID format:**
  The CB_ID format of German CBUs is:

  DE{3 character donor center}-{up to 10 digits}, e.g. DEABC-1234567890.

  However, in the data exchange with some EMDIS partners, the following deprecated CB_ID format is still in use:

  DE{3 character donor center}{up to 10 digits, padded with leading dots up to length 12}, e.g. DEABC...1234567890.

  Note: The ZKRD standard ID format for CBUs (e.g. used on ZKRD search reports) differs from the format used in EMDIS in that there is an additional (non-EMDIS-compliant) dash between country code and center code, e.g. DE-ABC-1234567890.

6.3 Level of Implementation

The level of implementation for the different message types is shown in Table 4.

Table 4: Implementation level and special features for EMDIS messages at ZKRD

	incoming	outgoing
PAT_UPD	fully implemented	fully implemented
ALM_REQ	not implemented	not implemented
ALM_RES	not implemented	not implemented
PAT_STAT	fully implemented	fully implemented
CBR_REQ	fully implemented	fully implemented
DONOR_CB	fully implemented	fully implemented
CBU_FULL	fully implemented	fully implemented
CBU_DIFF	fully implemented	fully implemented
PHEN_LIST	fully implemented	fully implemented
MATCH_SUM	fully implemented	fully implemented
TYP_REQ	fully implemented	fully implemented
TYP_RES	fully implemented	fully implemented
SMP_REQ	fully implemented	fully implemented
SMP_INFO	fully implemented	fully implemented
SMP_ARR	fully implemented	fully implemented
SMP_RES	fully implemented	fully implemented
IDM_REQ	fully implemented	fully implemented
IDM_RES	fully implemented	fully implemented
RSV_REQ	info to STS Search	not implemented
RSV_RES	info to local admin	not implemented
RSV_NOT	fully implemented	fully implemented
REQ_CAN	fully implemented	fully implemented
NO_RES	fully implemented	fully implemented
RES_REM	fully implemented	fully implemented
WOR_REQ	not implemented	not implemented
MARR_STAT	not implemented	not implemented
NEW_ADD	fully implemented	fully implemented
MSG_ACK	fully implemented	fully implemented
MSG_DEN	fully implemented plus info to local admin	fully implemented
WARNING	fully implemented plus info to local admin	fully implemented
TXT_MSG	fully implemented	not implemented
ADMIN	fully implemented	manually

6.4 Special Features

- Weekly list of open requests by fax and monthly via EMDIS for EMDIS hubs [RES_REM].

7 Finance

7.1 Schedule of Fees

The current Schedule of Fees can be found at https://partner.zkrd.de/en/content/detail/8. Please note the pricing of combined typing requests is the sum of the individual prices as per that price list minus 88 EUR for each additional typing in the same request.

7.2 General Terms

1. A preliminary search and the activation of the search process are free of charge.

2. ZKRD does not guarantee the correctness of any data provided on which the decision for a later request may be based. Thus, if any of the HLA-alleles of a donor are found to be different from its prior value, the fee for any service requested and performed up to that point must still be paid.

3. HLA-DRB1 typing does not include the testing of HLA-DRB3/4/5 alleles. If desired, HLA-DRB3/4/5 testing must be explicitly ordered. Note that testing of HLA-DRB3/4/5 may be charged even if no such allele could be identified. The requesting institution should be aware of the linkage between HLA-DRB1 and -DRB3/4/5.

4. Donor HLA testing is performed by molecular methods at a high resolution level. Definition can be found in 2.2.2.

5. The prices for all services (HLA-typing, ABO/Rhesus blood group serology or infectious disease markers) procured by ZKRD are comprehensive. Unless specifically requested, HLA-typing does not include screening for infectious disease markers.

6. The price for the provision of a sample for confirmatory typing includes testing for infectious disease markers. If testing of the above mentioned markers is requested separately, e.g. prior to a CT sample request, this service is charged separately.

7. Fees for typing requests and for the provision of blood samples will also be charged in cases where previous typing results could not be confirmed.

8. When providing blood samples, ZKRD expects to receive the results of the confirmatory typing as well as an explicit statement if the donor is to be reserved, within four weeks from sample arrival.

9. Unless explicitly stated otherwise in the pricelist, any transport related costs are not included.

10. The costs for the transportation service at the stage of CT blood sample as well as for products (onboard transport) vary. For both cases, ZKRD offers flat rates for major destinations.

11. The procurement fee for marrow or peripheral stem cells does not include the courier costs, a separately shipped pre-collection and/or IDM sample or repeat donor infectious disease testing at workup. Thus costs for all these individual request parts may be charged additionally. Provision of the courier by the transplant center is encouraged.

7.3 Cancellation

A fee can be charged if a registry or transplant center cancels a workup request. Exceptions may apply if the donor center issues the cancellation. This fee can also be charged in addition to postponement fees.

1. **Bone Marrow or PBSC:** Should the actual costs accrued exceed the cancellation fee listed in the price list, real costs will be charged. After start of donor mobilization additional costs may be incurred (e.g. G-CSF injections per donor).

2. **Cord Blood:** Cancellation of workup before shipment is invoiced according to services rendered (there may be additional costs for cancellation of flights, etc.) ranging from characteristics already transmitted in the CBU report up to the full price of the unit. The full price may be charged for recovery of costs due to potential loss of CBU resulting from the depletion of samples, etc.

7.4 Terms of Payment

1. The total amount is due within 30 days from date of issue of the invoice.

2. Payment must be made by money order or a bank draft direct to our business bank, expressed in EURO, for the full amount invoiced free of bank charges, drawn to the corresponding business bank, payee ZKRD.

3. Our invoice numbers should be noted on the document.

4. For payments including a larger number of separate invoices, a notice of payment should be provided beforehand indicating all invoice numbers and respective amounts to be balanced.

7.5 Accounts Payable

For the processing of invoices the following points should be observed:

1. Invoices should be available at the ZKRD within 60 days after service provision.

2. Patient ID, GRID (or CB_ID) service type and amount by service line must be stated on the invoice.

3. Requests are still paid after cancellation if the requested result is submitted to the ZKRD within 30 days and the invoice within 60 days of the cancellation date.

4. Invoices can only be accepted for services which were completely fulfilled as requested. Partial results are not accepted and thus cannot be paid for.

5. For invoices regarding the shipment of CT blood samples and including the testing of infectious disease markers, the IDM results must be available by the date of the invoice.

6. Requests for services for German patients expire after 90 days, i.e. they should be fulfilled within that period. Requests which are fulfilled after that period are considered expired and cannot be paid for.

7. Services are paid according to the international partner's valid price list, which must be available at the ZKRD and/or the WMDA at the time of invoicing.

A Appendix: Changes from last version

- Various specifications and phrases accomplished
- Adaption to high resolution (several places)
- Addition of necessary data exchange before initial search request
- 2.2.2 Removal of table 2
- 2.2.5 New section Health and Availability Check (HAC)
- Removal of five year follow-up
- 5.1 Hosted donor center GB-DKM removed and added information about new hosted donor center PY-VKP. Adjustments to GRID rules.